

4.10-4.15 Test Review

Name _____ Date _____ Period _____

1. Find $f \circ g(x)$ $f(x) = \sqrt{x+2}$ $g(x) = 2x^2 + 1$

2. $f(x) = \frac{x+1}{x-1}$ $g(x) = \frac{1}{x}$ Find domain of $f \circ g$.

3. What makes a function one-to-one?

4. Are the following functions inverses? (Need to show $f(g(x)) = x$ and $g(f(x)) = x$)

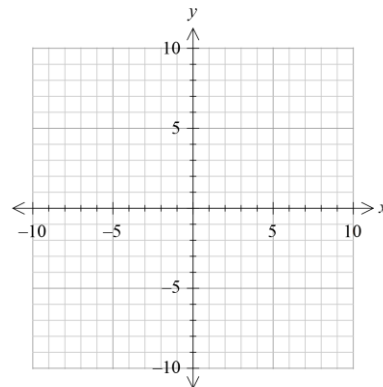
$f(x) = 3x - 6$ $g(x) = \frac{1}{3}x + 2$

5. Find the inverse of the function. State the domain and range of f . $f(x) = \frac{2x+3}{5x-2}$

6. $f(x) = \frac{2}{2x-5}$ State the domain and range of f and f^{-1}

7. Find $5^{3.2}$

8. Graph $\left(\frac{1}{2}\right)^x$ Identify the intercepts, asymptotes, domain and range.



9. Evaluate the following expressions.

a) $\log_8 \frac{1}{64}$

b) $\ln e$

c) $\log_{12} 1$

10. Find the domain of $f(x) = \ln(10 - x)$. Show work!

11. Solve the following equations. Show work!

a) $\log_3(x - 4) = 2$

b) $\log_2(x^2 - 2x) = 3$

c) $e^{3x} = 10$

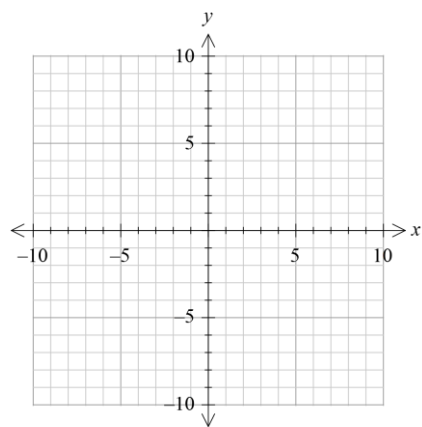
d) $\log(x+6) = 2$

e) $\log_4(x+5) = 3$

f) $3^{(2x-5)} = 9$

12. Graph the function and its inverse on the same Cartesian plane. Label each function on the graph and make a table of five key points for each function.

$$f(x) = \log_2 x$$



13. Write as the sum and/or difference of logarithms. Express powers as factors. $\log_8 \left(\frac{2x-3}{x^4} \right)$

14. Express as a single logarithm. $2\log_4 3 + \frac{1}{2}\log_4(x-5) - \frac{1}{3}\log_4 x$

15. Use the change of base formula and a calculator to evaluate the logarithm. Round your answer to three decimal places. $\log_{3.4} 210$

16. Find the amount which results from the following investment. \$10,000 invested at 8% compounded quarterly after a period of 5 years.

17. The formula for a small bacteria population is $P(t) = 400e^{.23t}$ After how many years will the population reach 2000?

18. The half-life of Wellsonium is 630 years. If 50 grams are present now how much will be present in 800 years?